



**NATIONAL
WILDLIFE
FEDERATION**

Offshore Wind Energy & Birds

Responsibly developed offshore wind energy is an important renewable energy opportunity to address the challenges sea, migratory, and coastal birds face from climate change.



Credit: Saliva Jorge

Impacts in Context

Since 1970, North America has lost one out of every four birds. An additional two-thirds of bird species face significant range loss and potential extinction unless we reduce greenhouse gas pollution. A transition to renewable energy offers an important opportunity to protect seabirds and shorebirds who are uniquely threatened by climate change. Higher intensity and more frequent extreme weather events, sea level rise, ocean acidification, shoreline erosion, and warmer oceans disrupt migratory, breeding, and foraging patterns of birds.

When responsibly developed in partnership with communities, offshore wind energy is a key renewable energy solution that reduces dependence on fossil fuels. While offshore wind provides an opportunity to address the climate crisis and protect bird species from past and ongoing human impacts, without responsible mitigation solutions, bird species may face the following threats from offshore wind development.

Collisions

Birds may collide with offshore wind infrastructure, but a species' vulnerability to collision depends on:

- Flight Altitudes: Birds that fly at the same height and distance from shore as turbines are more vulnerable to collision.
- Avoidance Abilities: Different species may be able to either avoid turbine areas completely, avoid turbines within wind projects areas, or make last-minute movements to avoid collision with rotor blades.

Transmission Lines

With increased coastal development, rising sea levels, and erosion of nesting spaces due to climate change and other human activity, transmission lines and facilities pose a relatively limited additional risk to the coastal ecosystems of shoreline birds.

Attraction

While the majority of birds avoid collisions effectively, some species can be attracted to turbines and other infrastructure, potentially elevating the risk of impact. This risk can increase during nocturnal migration or poor weather. Offshore wind turbine structures can also create artificial reefs, bringing more fish which can attract more seabirds.

Barrier Effect & Displacement

Avoidance can impact routine movements between breeding and foraging areas by birds that spend extra energy avoiding offshore wind facilities. This avoidance has a smaller impact on migratory birds that only alter their routes seasonally. The threat of displacement, when birds avoid an area near offshore wind turbines previously used for feeding, resting, or migrating, depends on whether species have a limited range or are more adaptable.

NO NET NEGATIVE IMPACT - THE MITIGATION HIERARCHY

The mitigation hierarchy used by the Bureau of Ocean Energy Management (BOEM) addresses potential impacts by first avoiding sensitive areas, then minimizing effects during project design and operations, and finally implementing mitigation measures and monitoring to manage any remaining impacts.

1 **AVOID...** critical areas for the most vulnerable species during siting:

- **Broad scale:** Using location data on birds and maps of ocean conditions, scientists work with developers and federal agencies to identify areas that are most important to seabirds. These areas are removed from the potential leasing area.
- **Finer scale:** From there, more specific datasets (local analyses, more detailed data about the distribution and movement of individual species, and collision risk and population models) are used to identify where risks to vulnerable species can be avoided by rearranging the distribution of turbines within lease areas.

2 **MINIMIZE...** risk by altering structures or temporarily changing operations at high risk times. If risk cannot be completely avoided, there are a variety of minimization techniques used including:

- **Change turbines layout** to create 'flight corridors', accommodating recorded migratory flight patterns.
- **Reduce vessel and noise-related disturbances during installation** by pausing construction at sensitive times (ex. nesting, staging, migration), refraining from using especially noisy construction techniques, avoiding driving through groups of birds, light reduction, and oversight from wildlife biologists.
- **Lower risk of blade collision** by increasing blade visibility with paint or temporarily slowing or stopping turbine operation during critical periods such as extreme weather or dense night time migrations.
- **Utilizing Federal Aviation Administration and U.S. Coast Guard compliant lighting and aircraft detection systems** on and around the turbines which include bird-safe features.
- **Including visual, audible, and physical anti-roosting and perching devices** on turbines.

3 **MITIGATE...** additional impacts with offsetting mitigation strategies. Projects can offset negative impacts that cannot be avoided through avoidance and minimization strategies through **other positive conservation actions** create a net zero change to the species. These strategies include:

- **Investing in stewardship activities to improve reproductive success at nesting colonies** such as reducing human and invasive species impact on beach-nesting birds and vegetation management.
- **Re-establishing nesting seabird colonies where they have declined** due to the impact of climate change on nesting sites, food availability, and weather patterns.

4 **MONITOR...** before, during, and after project construction to quantify impacts and understand if mitigation efforts have resulted in the desired outcome. Some strategies include:

- **Using radar, thermal detection, ranger finders, and cameras** to improve collision risk models.
- **Evaluating long-term trends of bird populations** tracked by BOEM's biological monitoring, research from Audubon's Seabird Institute, Biodiversity Research Institute, The Nature Conservancy, and more.
- **Requiring projects to regularly submit data and implement adaptive mitigation and monitoring plans** based on their annual reporting data to BSEE.